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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,646	12/12/2003	Espen Haugs	MAG-005	9041
22832	7590	05/25/2006	EXAMINER	
KIRKPATRICK & LOCKHART NICHOLSON GRAHAM LLP STATE STREET FINANCIAL CENTER ONE LINCOLN STREET BOSTON, MA 02111-2950			AMRANY, ADI	
			ART UNIT	PAPER NUMBER
			2836	

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

HA

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/734,646	HAUGS ET AL.	
	Examiner	Art Unit	
	Adi Amrany	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/29/04, 7/8/04, 9/16/05, 12/9/05, 5/9/06</u>                             | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Claim Objections***

1. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim 6 is a multiple dependent claim that depends on claims 2, 3, or 4, and is improperly preceded by claim 5. Since claim 6 does not depend on claim 5, it should be placed immediately after claim 4.

2. Claims 7 and 8 are objected to because they improperly depend on claim 5. It appears that claims 7 and 8 should depend on claim 6, which introduced the limitation of a three-phase system. Regarding the objection to claim 6, above, claims 7 and 8 should also precede claim 5. The proper order of claims should be numbers: 4, 6, 7, 8, 5, 9.

3. Claim 10 is objected to for being indefinite because of the recited claim language that the orthogonal fluxes are generated in "substantially" all of the magnetic core. See MPEP § 2173.05(d).

4. Claim 12 is objected to because the limitation of "a first phase" has no basis. Claims 11 and 12 do not provide for the limitation of a plurality of phases in the circuit.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over McClain (US 4,288,737), in view of Roberge (US 4,393,157).

With respect to claim 1, McClain discloses a system for voltage stabilization of a power supply line (figure 1), the system comprising:

an autotransformer (figure 1, item 2; column 2, lines 41-46) comprising a series winding and a parallel winding;

a variable inductance (figure 1, item Za; figure 3, item 20; column 3, lines 6-8) connected to the autotransformer, the variable inductance comprising:

a magnetic core (figure 3, items 21, 22; column 3, lines 40-55), a main winding wound around a first axis (figure 3, items 26, 27), and a control winding wound around a second axis (figure 3, item 28; column 3, lines 56-68); and

a control system (figure 1, item 15; lines 9-14) for controlling the permeability of the magnetic core;

wherein voltage variations in the power supply line are automatically compensated for (column 4, lines 4-11);

McClain does not expressly disclose the first axis and second axis are orthogonal axes, and when the main winding and the control winding are energized, orthogonal fluxes are generated in the magnetic core.

Roberge discloses an inductor with variable inductance based on the principle of orthogonal magnetization. Roberge discloses the first axis and second axis are orthogonal axes (figure 1; column 2, lines 31-54), and when the main winding and the control winding are energized, orthogonal fluxes are generated in the magnetic core. It is inherent that since the first and second axes are orthogonal, any fluxes generated by those windings would also be orthogonal.

McClain and Roberge are analogous because they are from the same field of endeavor, namely variable inductors.

At the time of the invention by applicant, it would have been obvious to a person of ordinary skill in the art to combine the voltage stabilization system disclosed in McClain with the variable inductor with orthogonal axes disclosed in Roberge.

The motivation for doing so would have been to create, within the common magnetic spaces, a magnetic torque proportional to the value of the direct current magnetic field.

With respect to claim 2, McClain and Roberge disclose the system according to claim 1. McClain further discloses the control system further comprises:

a processor unit (figures 1,2, item 15; column 3, lines 15-18 and 32-39);

a setpoint adjustment unit (figure 2, item 92; column 5, lines 34-44 and 51-64) in electrical communication with the processor unit;

a switch (figure 2, item 52; column 4, line 61 to column 5, line 3) in electrical communication with the processor unit.

a feedback input (figure 2, items 30, 40, 50; column 3, lines 15-39; column 5, lines 45-51) in electrical communication with both the processor unit and the power supply line;

a rectifier circuit (figure 2, item 30; column 4, lines 19-33) in electrical communication with both the processor unit and the control winding;

wherein the switch is operated to connect and disconnect regulation (column 5, lines 4-21);

wherein the feedback input senses an output voltage (column 5, lines 45-47); and

wherein the processor unit controls a control current supplied to the control winding (column 3, lines 32-39).

The McClain system comprises a processor that compares a feedback circuit voltage level to a setpoint adjustment unit voltage level and activates transistor switches to adjust the amount of current supplied to the saturable core to provide three-phase voltage regulation.

With respect to claims 3, 4, and 5, McClain and Roberge disclose the system according to claim 1. McClain discloses an autotransformer with series and parallel windings (discussed above), a main winding (discussed above), a first power supply line (figure 1, item A, column 2, lines 38-41), and a second power supply line (figure 1,

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secondary supply connection through item 12). McClain also teaches that various autotransformer configurations may be utilized (column 2, lines 41-46).

McClain and Roberge do not expressly disclose the specific arrangement of the autotransformer and variable inductor, as recited in claims 3, 4, and 5. It would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange the autotransformer and variable inductance in the manners provided in the claims, since it has been held that the rearranging of parts in an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70 (1950).

With respect to claim 6, McClain and Roberge disclose the system according to claim 2, and McClain further discloses a three-phase system for voltage stabilization (figure 1, items A, B, C, a, b, c; column 2, lines 35-41).

With respect to claim 7, McClain and Roberge disclose the three-phase system according to claim 6 (incorrectly recited as 5 as discussed above), and further, Roberge discloses the control windings for the three phases are connected in series and regulated together (figure 4; column 5, lines 17-31).

With respect to claim 8, McClain and Roberge disclose the three-phase system according to claim 6, and McClain further discloses the control windings for the three phases (figure 1, items Za, Zb, Zc; figure 3, item 28; column 5, lines 45-51; column 5, line 65 to column 6, line 13). McClain discloses that a drop in voltage in one of the lines affects only the reactor element of that voltage line.

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With respect to claim 9, McClain and Roberge discloses the system according to claim 1, and further, Roberge discloses the magnetic core comprises anisotropic material (column 1, lines 40-54).

With respect to claim 10, McClain and Roberge disclose the system according to claim 1. It would be obvious that in using a current in combination with a magnet, to generate a magnetic field, it would create a magnetic flux throughout the magnetic core.

With respect to claim 11, McClain and Roberge disclose the system necessary to complete the method of stabilizing a voltage, as discussed above in the rejection of claim 1. McClain discloses an input voltage (figure 1, item A) to an autotransformer (figure 1, item 2), connecting a controllable inductance (item Za) in series with at least one winding of the autotransformer, sensing an output voltage (item 16). Roberge discloses generating orthogonal magnetic fields in a magnetic core of the controllable inductance (column 2, lines 31-54), and adjusting at least one of the orthogonal magnetic fields (column 2, line 55 to column 3, line 14) to control a permeability of the magnetic core to adjust the voltage in response to the output voltage sensed.

With respect to claim 12, McClain and Roberge disclose the method of claim 11, and further, McClain discloses the controllable inductance is connected in series with a series winding (figure 1) in a *first phase* of a circuit. Figure 1 of McClain shows the controllable inductance (item Za) is in series with a series winding (item 2).

With respect to claim 13, McClain and Roberge disclose the method of claim 12, and further, McClain discloses the controllable inductance is connected to the load side of the series winding (figure 1). The controllable inductance (item Za) is placed




between the autotransformer (item 2) and load (item 1), which places it on the load side of the series winding.

With respect to claim 14, McClain and Roberge discloses the method of claim 11, and further, McClain discloses the step of controlling a permeability further comprises adjusting a control current supplied to a control winding of the controllable inductance (column 3, lines 56-68; column 4, lines 19-21).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adi Amrany whose telephone number is (571) 272-0415. The examiner can normally be reached on weekdays, from 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
BURTON S. MULLINS  
PRIMARY EXAMINER